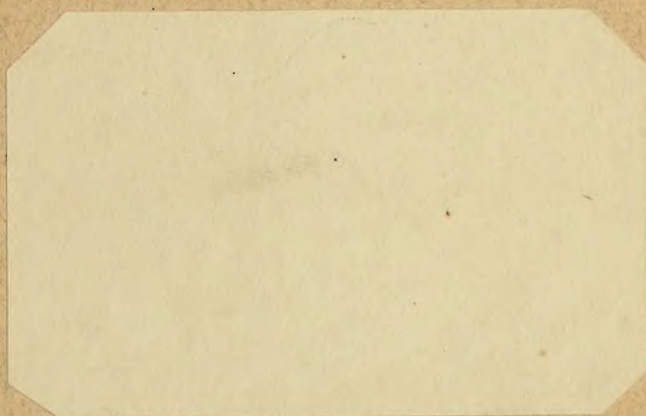


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MONTANA MONTANA

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AGRICULTURAL SERIES Nº2

UNITED STATES RAILROAD ADMINISTRATION
monograph

AGRICULTURAL SERIES Nº2

UNITED STATES RAILROAD ADMINISTRATION

FOREWORD

Helena, Montana.

Montana offers many advantages and inducements to the man or the woman who is looking westward for greater opportunities than may be found in their present location. Comparatively a new country, Montana is a state of vast undeveloped resources. The farmer who comes to Montana will find that he can engage in that business on less capital than is required in the Middle West or in the East. He will be able to grow crops without the use of fertilizers, and his production per acre will equal and in many cases exceed the output in less favored parts of the country.

Montana has provided liberally for the education of its boys and girls; there are on its statute books laws designed to protect and aid the farmer, stock-grower, homemaker, and business man.

Montana welcomes the patriotic, home and country-loving men and women who cast their lot with us.

S. V. Stewart.

Governor.

Bozeman, Montana.

Montana is a new state in the agricultural sense. Only recently has she moved forward from an exclusively range-stock section to a farming section. The farming possibilities of the State are only at the beginning of their development. Intelligent, progressive farmers, with sufficient capital to properly equip themselves for work, are needed to turn these farming potentialities into realities. A good start has been made and the Montana State College of Agriculture, which was organized some twenty-five years ago, has been a considerable factor in the forward agricultural movement. For many years specialists in this institution have been studying Montana agriculture, so that now the institution is particularly well equipped to serve the farmers of the State. Its field of service is threefold: first, to find new facts about Montana agriculture; second, to carry these facts and other farm experiences and

practices to the farmers of the State; and finally, to give to the young men and women who come to its halls the training and outlook that will enable them to better fight the battles of life.

The Montana Experiment Station, with some twenty or more specialists, is carrying on experiments in soils, field crops, fruit, garden crops, live stock, poultry, and other lines of agriculture. Study is centered not only on improved methods of production, but also upon the reduction of losses from disease and pests. The results of these observations and studies are published in bulletins and circulars and are sent free to any person requesting them.

The most effective agency employed by the college to bring the results of its work home to the farm people is the Agricultural Extension Service. In twenty-four counties agricultural agents give their whole time to educational and service work in their counties. The home demonstrators in nine counties are rendering an equal service to the farm women. These agencies, together with the extension specialists, carry a message of better agriculture and of helpful home suggestions to all parts of the State. Send for the program of the extension work.

The State College is the center from which all this work radiates, but at the institution an even more important work is carried on, viz., the preparation of young men and women from Montana homes for larger living and for larger success in life. Here they may equip themselves for community leadership and for service in the many special lines of work which the ever-expanding field of the farm makes necessary. Those who would know more of this service should write for further information.

I heartily approve of this booklet and we are willing and anxious to cooperate in every way possible with the Agricultural Section of the United States Railroad Administration.

L. B. Linfield

Dean and Director,
Montana Agricultural Experiment Station.

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This field of winter wheat yielded over 46 bushels per acre on benchland of Central Montana

Montana

Montana is the third largest state in the Union. It has an area of 147,182 square miles with an estimated population of less than 800,000. While a great portion of Montana is mountainous and another portion is suitable only for grazing, yet there are in the State, valleys containing thousands of acres of farm land; valleys larger than some of the noted agricultural states of the Union.

There was a time when Montana generally was considered a mining and grazing state with little agricultural land. That this opinion is erroneous is indicated by the fact that in the past ten years 30,000,000 acres of public lands within the State have been filed upon for homesteads. In 1918 there were assessed in Montana almost 40,000,000 acres of land, a large part of which was improved farm land. Incomplete statistics indicate that there are 83,000 farms in the State.

Montana offers many opportunities for a man to obtain a farm home at comparatively low cost, with opportunity to sell his products at a remunerative price. Unirrigated farms with wheat production records of from twelve to forty bushels per acre and which are within a reasonable distance of a

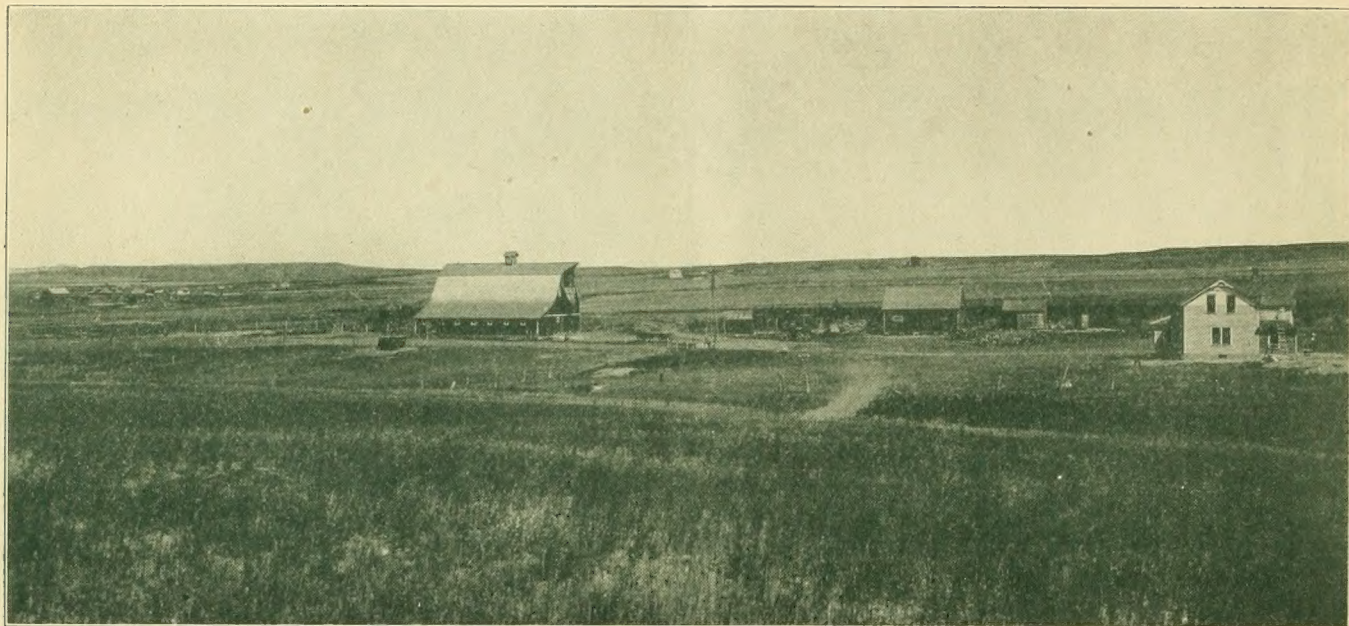
railroad and a town with school facilities, may be purchased for \$15 to \$40 an acre, while irrigated land sells for \$40 to \$150 per acre.

The United States Government has in operation in Montana a number of reclamation projects where the man seeking a home may purchase irrigated land on long-time payments and at a most reasonable figure. In addition to the Government projects, there are the Carey Land Act projects. These latter are under state control and supervision.

The farmer who comes to Montana and settles within a reasonable distance of the town or railroad has as many conveniences and as great an opportunity to enjoy life as does the resident of the Middle West. Montana is among the leading states in the development of hydro-electric power, with the result that in many sections electric power can be, and is, utilized in operations on farms. Montana is most liberal in the support of its public schools. The result of this policy is that one finds in the country school with a few pupils, teachers as well equipped as those in towns of 40,000 or 50,000 inhabitants.

In a majority of the counties of the State there are well organized farm bureaus and county agri-

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Many good farms are being created in Montana. The homesteader's "shack" and straw shed are rapidly being replaced by comfortable homes and large barns

cultural agents. The extension department of the Montana State Agricultural College carries on in the State a most extensive work, so that the farmer who comes to this State finds the agents of the National and State Governments ready to assist him.

One of the big opportunities offered the settler in Montana is in connection with the dairying business. In four years, from 1914 to 1918, the number of creameries more than doubled. In every valley where the creamery business has been started, it has been a success.

In many sections of the State conditions are peculiarly favorable for the cattle and sheep business, due to the fact that a considerable quantity of land is designated by both the State and Federal Governments as grazing land. Where land is classified as suitable for grazing only, a man may take up 640 acres under the homestead laws. These grazing lands afford fine pasturage throughout the summer and for a considerable time during the winter.

A very large portion of Montana is especially adapted to, and is being utilized in the growing of grain. In the past ten years the production of wheat has increased from 3,000,000 bushels to an average annual production of more than 29,000,000 bushels; flax from 104,000 to 3,000,000 bushels; oats from 10,000,000 to 22,000,000 bushels; barley from 875,000 to over 2,000,000 bushels; corn from 94,000 to 2,100,000 bushels.

Climatic conditions in Montana have been as little understood as have the agricultural possibilities. Like all sections of the country, the State at times has extremes of temperature, but it must be remembered that Montana is a region of magnificent distances and of great variation in temperature and precipitation. Possibly the following account, written by Randall J. Condon, superintendent of public schools in Cincinnati, Ohio, and who resided for a number of years in Helena, Mont., will give an understanding. "As in any extreme northern state, the thermometer occasionally records a low midwinter temperature but the cold spells are short. The ordinary outdoor occupations may be carried on in winter with little inconvenience. The summer temperatures never are oppressive and heat prostrations are unknown."

Precipitation comes generally during the growing season, when it is most needed. Taking the State as a whole, it may be said that the annual precipitation will average from thirteen to nineteen inches, with a larger part of this during the growing season.

Markets for the grain crops are found locally at the mills and elevators, there being in Montana more than 1,000 elevators and flour mills. What is not milled in the State is shipped to eastern or western grain markets. The market for vegetables, poultry, and creamery products is furnished by the mining and lumber camps and the larger cities of the State.

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Flax is one of the most important crops in the dry land sections of Eastern, Central, and Northern Montana

Production of these products in the State falls far short of the demand.

All grains do well in Montana, some sections being more suitable for winter than spring wheat. In recent years, Eastern Montana has produced corn on a commercial scale. Montana oats are noted the country over and the yield per acre is exceedingly large. In all of the irrigated sections alfalfa is a principal hay crop. In the irrigated valleys of the higher sections timothy is grown, while in all sections of the State the wild native grasses are available for hay.

In the older sections of the State diversified farming is being followed, much attention being given to dairying, hog raising, and to the poultry industry. As in all new countries, greater attention has been and is being paid, in Montana, to the production of wheat.

In irrigated sections the production of sugar beets has attained considerable proportions, three sugar beet factories having been constructed in the State.

Montana has soil and climatic conditions peculiarly adapted to the production of peas. In several sections peas for seed are grown on a large scale under contract with eastern seed dealers. In addition to the production for seed a very large acreage is devoted to production for canneries, of which there are several in the State.

In the Yellowstone Valley the growing of beans on a commercial scale has developed into a large business the past two years, the shipments from that

section in 1918 aggregating seventy-five or eighty cars.

The western part of the State is the most successful fruit-growing section, particularly in the numerous mountain valleys. However, in nearly all sections except the higher valleys the hardy tree and bush fruits for home use are grown.

The following report of the field agent in Montana of the United States Department of Agriculture shows the production of the more important crops grown in Montana in 1918:

IMPORTANT CROPS	PRODUCTION BU.	TOTAL VALUE
Spring wheat.....	17,250,000 "	\$33,465,000.
Winter wheat.....	8,184,000 "	15,877,000.
Corn.....	2,100,000 "	2,835,000.
Oats.....	20,400,000 "	16,320,000.
Barley.....	1,914,000 "	1,914,000.
Rye.....	300,000 "	432,000.
Flaxseed.....	2,844,000 "	9,613,000.
Potatoes.....	7,020,000 "	5,616,000.
Hay (tame).....	1,277,000 TONS	24,049,000.
Hay (wild).....	362,000 "	5,973,000.
Apples (total).....	790,000 BU.	1,659,000.
Total.....		\$177,753,000.

EASTERN MONTANA

Consists of the following counties: Carter, Fallon, Wibaux, Richland, Sheridan, Custer, Prairie, Dawson, Valley, most of Rosebud, Phillips, Blaine, Hill, and Toole. Its chief rivers are the Missouri, Yellowstone, Milk, Powder, and Musselshell.

In topography it is very distinct from the rest of the State. It is classed as the plains section, and is a part of the great plains of the United States, which extends over Kansas, Nebraska, and the

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Sugar beets are one of the most important and profitable crops on irrigated land in Montana. They are now grown on both sides of the Continental Divide. One sugar factory has been in operation a number of years at Billings, and two new factories have recently been constructed at other points in the State

Dakotas. This area has a generally rolling surface, broken at intervals by tree-fringed creeks and rivers and by occasional low hills or "buttes."

Before the days of the white man it was an unbroken expanse of rich, nutritious prairie grass, and was the favorite pasture ground for great herds of buffalo. Even ten or fifteen years ago its prairies were hardly disturbed. To-day it is dotted with homesteads and broken up into many fields of wheat, flax, and other crops. Where the prairie sod is still unturned the settlers' horses and cattle now range and fatten upon the native grasses.

Eastern Montana includes the great spring wheat and flax-growing area of the State. In fact, 60 per cent of the spring wheat and 90 per cent of the flax grown in Montana are grown in these counties. These crops have proved so generally profitable that they have hindered the establishment of more permanent general farming. The chief corn-producing counties also lie within this section.

According to soil conditions and crop possibilities this plains region is rather definitely divided into two parts, the Missouri River forming the dividing line.

North of the river the land is more generally level, not so broken, and the soil is black in color, deep, rich, and productive. It is well adapted to large scale tillage and the use of tractors is common in this

section. Spring wheat and flax are the leading cash crops, though there is some winter wheat grown. Barley and oats are grown for feed.

Southward from the Missouri, the topography is more broken, giving more grazing areas, and hence this part is more adapted to live stock and diversified farming. The soil shades off from black to a chocolate colored loam, with occasional areas of heavy land approaching gumbo in texture. It is a very fertile soil, yielding heavy crops of all small grains. In addition, the climatic conditions are more favorable to corn, and it is in this section that the bulk of Montana's annual 2,000,000-bushel corn crop is grown.

Corn growing in Montana may seem odd to some "corn belt" farmers; yet Montana's corn crop has steadily increased. It is now twenty times as large as in 1908, and the yields compare very favorably with those states lying along the northern part of the corn belt.

The seed used is acclimated seed of early flint and dent varieties, which have through careful selection become adapted to Montana conditions. The stalks are shorter than eastern corn, and much more leafy. Planting is done about May 10th to 15th, and methods of planting and handling are about the same as in other states.



Spring wheat in Eastern and Northern Montana. Over two-thirds of Montana's total acreage is spring wheat. The acreage of all wheat in the State has increased from 150,000 acres in 1908 to over 2,000,000 acres in 1918

The farmers in this section have found that corn fits admirably into crop rotation, and that it provides the best of winter feed for their stock. The yields of small grains are about 30 to 40 per cent larger on corn stubble.

Flax is a leading crop on new breaking. During the past few years many farmers have harvested flax crops whose gross returns have equalled the first cost of the land upon which it was grown.

Spring wheat, however, is the chief cash crop and the acreage devoted to it has increased at the rate of 50,000 acres per year for the past ten years. Marquis and Durum are the chief varieties grown. The yields range from six to forty bushels per acre, depending upon the season and the tillage methods used.

Sugar beets are a profitable crop in the Yellowstone Valley and are promising well in other sections of the State where they have been tested. In general, they do well under irrigation anywhere in this section.

Beans as a commercial crop have developed rapidly in this section during the past five years, about 8,000,000 pounds being produced for market in 1918—doubling the 1917 crop.

Montana's population is growing so fast and her agricultural resources are being developed so rapidly that it is hard to keep a record of them all, but no

part of the State has grown more rapidly than the eastern section.

Blaine County, which is in the northern part of this section, is crossed from west to east by the Milk River, from which the Government is taking water to irrigate a large part of the valley. Sugar beets do well here under irrigation. Heavy fields of alfalfa also are obtained on irrigated land. All the small grains are grown on the unirrigated uplands, which comprise a large part of the county. Irrigated land may be purchased for \$35 to \$85 an acre; dry farm land from \$10 to \$30, and grazing land from \$1.50 to \$5.00

Carter County, in the southeastern corner of the State, is well underlaid with coal, thus fuel is abundant and easily obtained. The county also contains the Sioux National Forest Reserve of 40,000 acres of pine. Sawmills operating here furnish all necessary building lumber. The climate is good and the growing season long. Only one-tenth of the tillable land is under cultivation at present. Stock raising is general and profitable. Auto trucks are being used for hauling wheat to market. Dry land may be purchased for \$10 to \$20 an acre and grazing land for \$1.50 to \$5.00.

Wheat, oats, barley and corn are the leading crops of Custer County. Alfalfa produces two cuttings per season and the acreage devoted to this

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Alfalfa, Corn, and Range Pasture make stock raising profitable in a large portion of the Eastern part of the State

crop is increasing rapidly. Miles City, (the county seat) is the largest primary horse market in the United States, and also ships more horses, cattle, sheep and wool than any other city of its size in the State. Farmers producing commercial alfalfa seed are organized into a growers' association which markets several carloads of seed annually. Irrigated land may be purchased for \$75 to \$100 an acre, grazing land for \$2.00 to \$7.00, and dry farming land for \$10 to \$35. In Dawson County, flax, wheat, oats, barley, and potatoes are grown for market. From Glendive, as many as seventy-five carloads of potatoes have been shipped in one season. Corn, in this county, is growing rapidly in importance and the better farmers use it to rotate with their small grains. Dry farm land may be purchased for \$12 to \$40 an acre, irrigated land for \$50 to \$75, and grazing land for \$2.00 to \$5.00.

The prairies of Fallon County are noted for their wheat production. Flax, oats, and corn also are grown commercially. Alfalfa raising and silo building both are on the increase in the territory along the railroads where dairying has been found exceptionally profitable. Dry farm land may be purchased for \$15 to \$35 an acre and grazing land for \$2.50 to \$6.00.

Soil and topographic conditions in Hill County are especially favorable to the use of tractors, making large scale farming common. An exceptionally large percentage of the land is tillable. Wheat,

oats, flax, and barley are the chief crops. Livestock raising is important. A substation of the State Agricultural Experiment Station is located at Havre. Irrigated land may be purchased for \$40 to \$65 an acre, dry land for \$10 to \$30, and grazing land for \$1.50 to \$5.00.

Phillips County, like all others in the northern tier of counties, has been settled rapidly; in fact, the larger part of the land has been taken up since 1913. There is little government land left, but some state land is yet available. There is some mountainous territory in the southwestern corner of the county that has producing mines of gold and silver, ranking second in the State. Livestock raising is common. Land prices run in about the following figures per acre: irrigated land, \$30 to \$70; dry land, \$10 to \$25; grazing land, \$1.50 to \$5.00.

Prairie County is named for the broad prairies of which it is a part. It lies in the heart of the State's corn section and produces all the cereals, wheat, oats, flax, barley, rye, and corn. Many silos are being built. Dry land for farming may be purchased for \$10 to \$35 an acre, grazing land for \$1.50 to \$5.00.

Richland County lies extended along the valleys of the Yellowstone and Missouri rivers. It includes within its borders the lower Yellowstone irrigation project, where alfalfa, corn, potatoes, and sugar beets are grown. One thousand acres of sugar beets were produced last year and shipped to the factory at



Low-priced grazing land in the foothill and plains regions, dependable production of hay, alfalfa, and corn fodder, have opened a new era of stock raising in Montana

CENTRAL MONTANA

Billings. Large crops of small grains are grown on the unirrigated bench lands. Coal is abundant throughout the county. Irrigated land may be purchased for \$50 to \$100 an acre, dry land for \$15 to \$35, and grazing land for \$1.50 to \$5.00.

The largest body of land completely under cultivation in one farm, in the State, is located in Sheridan County. It is a 3,200-acre ranch, all in grain. Four large engines are used in the tillage operations on this farm. Flax is the great new-ground crop in this county. Dry land sells for \$15 to \$50.

Toole County is mostly level prairie, giving a large percentage of tillable land. Much live stock is raised and some alfalfa is now being grown. Wheat, oats, barley, and flax are the chief crops. Dry land sells for \$10 to \$25 an acre and grazing land for \$1.50 to \$5.00.

Valley County produces good crops of wheat, oats, barley, and alfalfa. The county consists of prairie land covered with dense sod. Irrigated land sells for \$30 to \$70 an acre, dry land for \$10 to \$25, and grazing land for \$1.50 to \$5.00.

Wibaux County is one of the smallest counties in the State, but has a large production of wheat, oats, barley, corn, flax, and potatoes. Dry land ranges in price from \$17.50 to \$45 an acre, and grazing land from \$2.50 to \$6.00.

The central part of Montana includes some of the most productive areas of the northwest. Here we find soil and climate favorable to the profitable production of a wide range of agricultural products. Winter wheat, spring wheat, oats, barley, sugar beets, peas, corn, alfalfa, clover, grasses, live stock and a variety of fruits of surpassing quality are generally grown. In this great area there are still millions of acres of excellent agricultural land which may be purchased at a comparatively low figure. Thousands of farmers may establish and maintain comfortable homes in this central part of the "Treasure State."

Considering first the conditions and opportunities of the western portion of Rosebud County, which is in the southeast of the central region, we find favorable conditions for a wide range of crops. Along the streams many thousands of acres of irrigated alfalfa are raised. These return profitable hay and seed yields. Stock feeding is general in this section. All kinds of spring grains do well under irrigation. Much of this county is farmed without irrigation, and on these "dry farms" winter wheat and corn are most profitable. Rosebud County is one of the corn-raising counties of the State and the crop matures in good shape. Spring crops, such as spring



This picture shows better than words can describe the difference between "bottom land," "bench land," and "foothill land"

wheat, oats, barley, and flax, are all successfully grown in Rosebud County. All of the hardy varieties of the larger fruits and vegetables find favorable conditions here.

There is much land available at a reasonable figure. The average price for non-irrigated land is between \$15 and \$40 and that of irrigated land between \$75 and \$125 an acre.

In Yellowstone County, alfalfa, the great stock fattener and soil renovator, is widely grown. Three and four crops, ranging from three to four tons per acre, are cut each season and it is a staple crop on practically every farm. Most of the hay raised is converted into meat or dairy products.

The Yellowstone Valley was the first sugar-beet-producing section of Montana. Here upwards of 25,000 acres of sugar beets are annually raised and converted into sugar. On the best farms yields up to seventeen tons per acre are obtained. The average yield for the entire acreage ranges around eleven tons. The price per ton at the present time is \$10, which makes sugar beets highly profitable. Even at the pre-war price of \$7 and \$8 per ton sugar beets are an excellent crop.

General grain-raising conditions are favorable in this locality; spring wheat, oats, barley, and corn all do well both with and without irrigation. Such fruits as apples, plums, and cherries and all classes of small fruits do well in this area. Land values range from \$100 to \$200 an acre for irrigated land and from \$15 to \$40 for dry land. There is still much

good land available at the low figures.

Big Horn County, lying southeast of Yellowstone, has splendid natural conditions and offers large opportunities to incoming farmers and business men. A small portion of the county is under irrigation and very profitable crops are raised. The large area not irrigated awaits only the incoming of settlers to insure enormous productiveness. Winter wheat, corn, flax, spring grain, and fruit do well. Some sugar beets are raised and the conditions are very favorable. Dry land ranges in price from \$10 to \$30 an acre and irrigated land from \$75 to \$125.

Carbon County is a district with favorable conditions for profitable agriculture. The seasons are long and a wide range of agricultural crops are being raised. Sugar beets and all classes of grains and hay do well. Fruit, especially apples of superior quality, are raised in a commercial way in parts of this county. Prices of dry land vary from \$15 to \$35 an acre, and irrigated lands from \$75 to \$175.

Stilwater County conditions closely resemble those of Yellowstone County. In the county, and extending into the latter, is a fertile district known as the Lake Basin in which the wheat yields average 25 to 30 bushels per acre. The same types of agriculture are common. Sugar beets, alfalfa, and grains, with a good variety of fruits and vegetables, find favorable conditions. The land in this county ranges from \$15 to \$40 an acre for unirrigated land, and \$75 to \$150 when irrigation water is furnished.



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Two to three cuttings of alfalfa, totaling four to six tons of hay per acre on rich bottom land of the central part of the State

Conditions in Sweet Grass and Park counties differ somewhat from those previously mentioned in the central section of the State, in that the altitude is higher on the average and there is a larger percentage of range land. In both counties, however, there are large tracts of excellent farming land, and profitable crop and stock raising is well established. Alfalfa and all kinds of grains do well. Stock raising is carried on extensively and the splendid native pastures make this a most profitable business. In Park County the Shields River Valley, lying north of Livingston, is well known as a winter wheat-raising section. The annual precipitation is high in this part of the State and high yields of spring grains are harvested.

There is much good land that may be purchased at a low figure in both counties. Non-irrigated land averages from \$10 to \$30 an acre in Sweet Grass and from \$15 to \$50 in Park County. The land under irrigation ranges in price from \$50 to \$100 an acre in Sweet Grass County and from \$75 to \$125 in Park County.

Gallatin County lies just west of the Bridger range of mountains. The valley land in this county is one of the largest and richest irrigated tracts of the State. Around the valley and in the western part of the county there is much excellent dry farming land. Though this district has been settled and parts of it farmed for more than half a century, there is still a large quantity of good land available for the newcomer at a moderate price.

Spring and winter wheat, oats, barley, peas, clover, and grasses are the principal crops raised in Gallatin County. The output of winter wheat from the non-irrigated land is large and the yields range from 20 to 45 bushels per acre. In the valley, under irrigation, oats yielding from 75 to 125 bushels per acre and weighing from 38 to 44 pounds per bushel are commonly raised.

A good many thousands of acres are devoted to the growing of canner's variety of peas. These are produced under contract for the canners of the Central West. The natural conditions in the Gallatin Valley are favorable for peas.

Land values vary between wide limits. Good irrigated land may be purchased for \$75 to \$150 an acre while non-irrigated land sells for \$15 to \$80. This wide difference in price is due to the location and development of the land.

Madison and Jefferson counties present widely varying conditions agriculturally. They include considerable foothill and mountain land, which affords profitable grazing. In both are rich irrigated valleys and productive dry-farming areas. Alfalfa finds favorable conditions in these counties and unusually good returns from native and range grasses are harvested. All types of spring grain, such as spring wheat, oats, barley, and flax, are successfully raised and in sections of both counties potato raising is extensively followed. The unusually large potato which has found such general favor



Just bench land in Central Montana

is raised in large quantities, especially in the Ruby Valley of Jefferson County.

The large extent of rich, natural pasture land, combined with splendid alfalfa-raising possibilities, make this section of the State one of the best natural stock-raising sections.

There is much good farming land in these counties open to settlement. The prices for non-irrigated land may vary widely, but good tracts may be purchased as low as \$10. The irrigated land ranges in price from \$50 to \$125 an acre.

Broadwater County, lying north of Madison and Jefferson counties, is a county of excellent conditions and large opportunities for the newcomer. There is much level land and good natural conditions for dry and irrigated farm development. The raising of pedigreed stock has already attained considerable prominence and the Broadwater County show-herds of cattle and hogs especially are well known. Alfalfa, clover, and the natural grasses do very well here and this has attracted leading livestock breeders.

All kinds of grains are profitably grown in Broadwater County. On dry land good yields of winter wheat are produced. Spring wheat, oats, barley, and flax are raised on both dry and irrigated lands.

There is much land open to the incoming settler at moderate prices. When irrigated, the price of this land runs from \$50 to \$100 an acre. The dry land price ranges from \$10 to \$35.

Beaverhead County, in the southwest part of the central district of Montana, is well known for its superior grain and for the very extensive livestock production. Here will be found more irrigated land than any other Montana county. There is also considerable range land, which affords cheap pasture for stock. The hay-producing possibilities are excellent. This combination accounts in a large measure for the extent and quality of the stock raising in Beaverhead County.

In grain growing, especially oats, the county has an excellent record. There are many irrigated valleys where oats averaging 40 to 45 pounds to the bushel yield over 100 bushels to the acre. Other kinds of spring grain give good yields and are profitably raised.

Beaverhead County offers good opportunities for the purchase of cheap land. Good land for dry farming ranges in price from \$10 to \$40 an acre, while irrigated lands range between \$50 and \$100.

Turning to the consideration of the central and north central parts of the State, we find a vast territory of excellent land awaiting only full settlement to insure rich returns. The counties of Musselshell, Meagher, Fergus, Cascade, Lewis and Clark, Chouteau, and Teton are possessed of magnificent possibilities.

Musselshell County is a favorable county both in point of location and in natural possibilities. This



Favorable conditions are found on many farms of the Central Montana Region for a combination of stock and grain growing. Many of the most successful farmers follow this system

county is abundantly supplied with streams, making possible large irrigation development. Already considerable irrigating has been done and excellent crops are being raised. Again, there are broad stretches of non-irrigated benchland where dry farming may be profitably carried on.

Alfalfa is generally raised in Musselshell county and three or four crops are annually cut. Winter wheat is the leading benchland crop, though spring wheat, oats, barley, flax and corn are all being profitably grown. The fruit raising conditions are good for apples and all kinds of small fruits.

This county offers attractive possibilities to the homeseeker. Good nonirrigated land may be purchased for \$15 to \$35 an acre, and irrigated land for \$50 to \$100.

Meagher County, with an average altitude somewhat higher than that of the surrounding districts, is especially well suited for stock raising. Hay of all sorts, particularly alfalfa, is raised in profitable yields and the broad expanses of rich native pasture favors stock growing.

The growing of winter wheat, spring wheat, oats, barley and flax is carried on in sections of Meagher county, and there are many other localities which may be developed. The price of land in moderate, ranging between \$15 and \$35 an acre for dry land and \$50 to \$100 for irrigated land.

Fergus County, which includes a large part of

the well known Judith Basin, is the great dry farming, winter wheat raising area of the State. Here you will find millions of acres of unsurpassed dry farming land, where the soil is rich and the surface practically free from anything that would interfere with cultivation.

The soil is a rich loam, possessing abundant humus, and is intermixed with particles of limestone in such a way as to insure permanency of productivity.

Winter wheat, leading crop, is commonly grown under a plan of alternate wheat and fallow. The type of wheat is the hard red winter variety, and the quality is of the highest. The yields range between 18 and 50 bushels an acre with an average of 25 to 30 bushels.

Other grains do well, and spring wheat, oats, barley and flax are all good crops. Alfalfa is raised quite extensively and yields from one to three tons an acre on dry land.

Livestock raising is being developed rapidly under regular farming conditions. The number of cattle and hogs on the average farm is rapidly increasing.

Around the foothills and mountain areas near the borders of the county, stock raising is generally followed. The average rainfall, which is close to 17 inches annually, insures good natural pastures of high quality.



Purebred Herefords

Many small ranch homes in mountain valleys, surrounded by open range or forest reserve, offer opportunities for cattle production on a very profitable basis

Land values in Fergus County range between \$25 and \$75 an acre for dry farm land and between \$60 and \$100 for irrigated land. While settlement has been active, there is still a lot of good land available, at a moderate price, awaiting settlement.

Cascade County offers attractive and varied agricultural possibilities. Here we find good dry farming land suited to profitable wheat raising, good irrigated land where alfalfa, grains and other farm products are raised, and foothill and mountain land where stock raising is carried on. The dairy industry of the county is an important one.

Winter wheat raising is extensive and profitable and the conditions are very similar to those in Fergus County. The yields average from 20 to 30 bushels an acre. Spring grain, including spring wheat, oats, barley, peas and corn, are raised successfully.

There is considerable good irrigated land in Cascade County. The well known Sun River project is in this section and is rapidly being developed.

Land values range between \$20 and \$45 an acre for dry land and from \$75 to \$125 for irrigated land. There is still opportunity for extensive settlement.

Chouteau County, lying directly north of Cascade County, is great in area and rich in agricultural possibilities. The Missouri River, with its tribu-

aries, flows through a part of it and provides water for the irrigation of considerable land. In the range days this was a rich stock raising section and the soil which produced the native grasses is now producing excellent returns of cultivated crops.

Alfalfa, winter wheat, spring wheat, oats, barley, and flax are the crops most commonly grown. There are many broad benches where dry farm grain raising is well established and where excellent grain is being produced.

Stock raising is still important in Chouteau County. There is considerable foothill land available and the prices are moderate. The dry farm land price ranges between \$15 and \$20 and the price for irrigated land from \$60 to \$100 an acre.

Teton County, occupying territory extending from the border down one-fourth of the distance to the south line of the State, presents widely varying agricultural possibilities. Here there is good natural range land, fine dry farming localities, and considerable good farming land under irrigation.

The west line of this county follows along the main range of the Rocky Mountains. This means that there is a lot of good foothill and mountain grazing land available for stock-raising purposes. There are also many mountain streams which provide good water for stock and for the irrigation of alfalfa and other feed crops.



One of a number of Montana Power Company's plants. This one develops 60,000 horsepower

There are many broad benches and level prairie stretches where the natural dry farming conditions are good. Winter wheat and spring grains are successfully raised and all classes of small fruits and vegetables do well.

In Teton County the well known Conrad-Valier irrigation project and a number of other good irrigation tracts are located. On this land excellent yields of alfalfa, clover, and all classes of grain, fruit, and vegetable crops are raised.

Because of its large area and percentage of level farming land, this county offers excellent opportunities to incoming settlers. Good dry land may be purchased for \$10 to \$40 and highly productive irrigated land for \$50 to \$100 an acre.

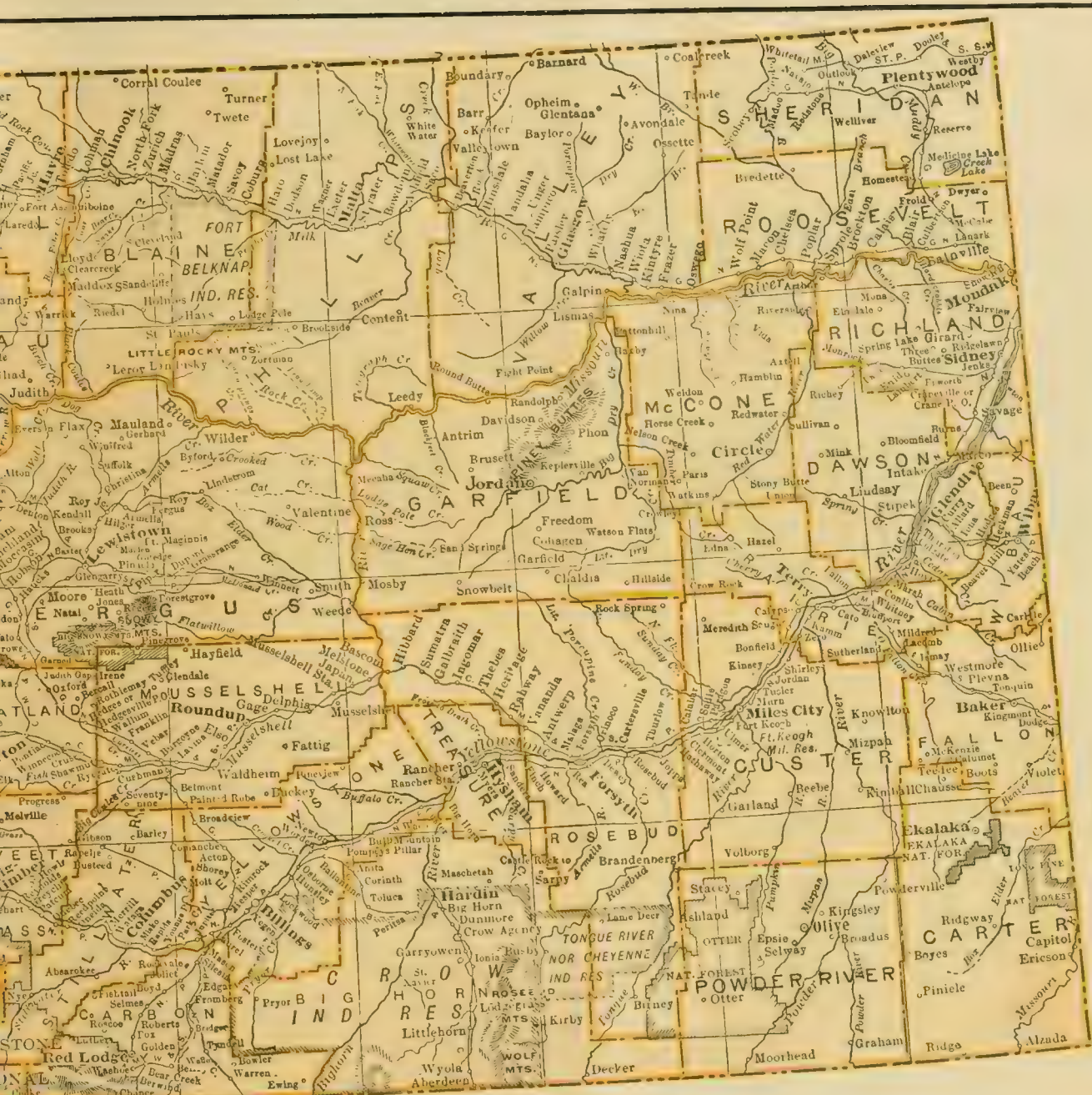
Lewis and Clark County, situated in the central part of the State, is one of the oldest and wealthiest counties in Montana. A considerable area in the northern part of the county is in the Sun River basin. The Prickley Pear and Sun River valleys embrace most of the land under cultivation. Stock growing has been a leading industry from early days, although farming development has been stimulated by the recent completion of a large irrigation project. Wheat, oats, barley, flax, potatoes, and hay are profitable crops.

WESTERN MONTANA

West of the main chain of the Rockies and reaching to the crest of the Bitterroot Mountains is Western Montana. The main chain of the Rockies may be defined as extending from the northern boundary line of the State southward through Helena and Butte. This part of the State is a small empire in itself—250 miles long and 50 to 100 miles wide. It is made up of rich mountain valleys, watered by great rivers and including great areas of national forests. The soil is most productive, fuel is abundant, the climate is mild and delightful, and the scenery generally throughout the section makes it most attractive.

The climatic conditions are favorable for fruit raising. Apples are grown commercially in five of the counties; sweet cherries and pears, in two. Peaches and apricots are grown on the north shore of Flathead Lake. Small bush fruits and strawberries do well throughout the entire section. The elevation varies from 1,800 to 2,000 feet in western Lincoln and Sanders counties to 5,100 in Granite County. The principal crops include oats and hay in the higher altitudes and wheat, peas, corn, potatoes, and fruits in the lower valleys. Live stock raising is profitable generally throughout this sec-





MAP OF MONTANA



Winter wheat is one of the surest and best crops in the Western part of the State

tion. Alfalfa is a profitable crop in nearly all the counties. Sugar beets are grown in the Missoula territory and large crops of potatoes are raised in the Bitterroot Valley.

Western Montana is the oldest farming section of the State. Farm bureaus are organized in Sanders, Ravalli, Flathead, and Missoula counties.

Flathead County, has a great variety of farming land. Wheat, oats, seed peas, potatoes, and apples are the principal crops grown. A large section of the county is Indian reservation, where some federal irrigation work is being carried on. Good yields of wheat are raised under dry farm conditions. Dry farm land may be purchased at prices ranging from \$15 to \$30 an acre.

Powell County is known for good yields of wheat. Hay crops of unusual value also are found in this county. Live stock raising is general and profitable. Considerable farming is done on irrigated tracts. Dry farm land may be purchased for \$10 to \$20 an acre, irrigated land \$60 to \$100, and grazing land \$2.50 to \$5.00.

Missoula County is widely known for yields of grain and fruit. Dairying and stock raising are growing steadily in importance and sugar-beet growing is gaining in proportions each year. Lumbering and agriculture in this county are about equal in

importance. The University of Montana is situated at Missoula. Dry land may be purchased for \$15 to \$30 an acre; irrigated land between \$75 and \$125, and grazing land between \$3.00 and \$7.00.

Ravalli County, bordered on the west by the Bitterroot Mountains, is one of the richest and best improved counties in the State. The famous Bitterroot Valley, 75 miles long and from 2 to 15 miles wide, has a most fertile soil and a delightful climate. Dairying, horticulture, and general farming are the chief occupations. Abundance of irrigation water is at hand for crop production. Large fruit farms are found throughout the valley, apples being raised commercially. Experts have pronounced this section as ideal for the dairy industry. Coal is found within the county. Large metal mining and lumbering operations are carried on in the mountainous sections. Dry farm land may be purchased for \$12 to \$25 an acre, irrigated land between \$75 and \$125.

Granite County, just east of Ravalli County, is chiefly noted for its mineral wealth although farming and stock raising are growing in importance. Much attention is being paid to the breeding of improved strains of horses. Some choice irrigated land is found in the Hellgate Valley. Hay is the most important farm crop although grain growing is increasing. Improved irrigated land ranges in price

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Pure mountain air and pure water, excellent pasture, alfalfa hay, sheltered surroundings, and mild climate, combine most favorable conditions for dairying in the irrigated valleys of Montana

from \$50 to \$100 an acre. Unimproved irrigated land ranges from \$20 to \$40 and dry farm land from \$10 to \$20.

Mineral County is generally composed of picturesque ranges of mountains, bisected by the Clark's Fork of the Columbia River. In the valley of this river is found some rich land that makes agriculture steady in its growth. Hay is at present the principal crop, although live stock raising is becoming a very profitable industry. It is believed that the county will develop extensive and profitable dairying farms in the coming few years, the conditions being ideal. There is considerable land that may be purchased at a low price. Unirrigated land sells for \$10 to \$20 an acre, and grazing land for \$3.00 to \$7.00.

Sanders County, just north of Mineral County, is largely devoted to agriculture. Wheat, clover, timothy, alfalfa, oats, potatoes, peas, and barley are the principal crops. Some of the best orchards in Montana are located in the valley near Plains. The western half of the county is mainly cut-over lands and natural meadows. Land in this part of the State sells for \$10 to \$50 an acre, while in the prairie section the prices range from \$25 to \$75.

Lincoln County, at the extreme northwestern corner of the State, is possessed of very fertile soil. The rainfall here is abundant, making dairying and

farming profitable. Fruit growing is important, while hay raising has always been an important farm occupation. All the spring grains do well. The Tobacco Plains district is well known for its live stock raising and grain growing. Dairying is growing in importance. Dry farm land sells for \$8.00 to \$25 an acre, grazing land for \$3.00 to \$7.00.

CLIMATE

Montana has three fairly distinct climatic belts. West of the Rocky Mountain divide, the country is mainly mountainous but is interspersed with fertile valleys of larger or smaller areas. Here we find a modification of the coast climate, due to the western winds. The altitude gives a cooler climate than farther west, but it is equable, the temperature seldom rising above 95° in the summer or going 10° below zero in the winter.

Precipitation in this section is somewhat greater than the average for the State, but varies in the different valleys.

The central part of the State is sometimes spoken of as the Chinook Belt. This district, like that west of the divide, has a climate modified by the coast winds. Thus there are on the average less extreme temperatures, both summer and winter. Again, many of the valleys are protected from the cold winds by the mountains, which appear to deflect



Apples are grown commercially in the Western part of the State

the winds to the eastward. In the higher valleys and plateaus of this section we find longer winters and shorter summers than in the lower valleys and plains to the east. The summers are generally cool but the winters seldom bring severe weather.

The months of greatest precipitation are the crop-growing months, a very important factor in crop production. Fully 50 per cent of the rainfall of the year comes during the months of April, May, June, and July, when it can best serve in starting and maintaining the growth of grains, grasses, and vegetables of all kinds. September and October, it should be noted, have sufficient rainfall to start the winter wheat, an important crop in this district.

Eastern Montana has a climate of greater extremes, being colder in winter and warmer in summer than the districts farther west. This is a rolling plain country and therefore more subject to wind.

The annual precipitation of this district will average from thirteen to sixteen inches, varying in the different sections. Here, however, we find the greatest precipitation during the growing months, nearly one-half the rainfall of the year coming in the months of May, June, and July.

A feature common to all parts of the State is the large number of sunny days both in summer and in

winter. The air is dry and temperatures that would be extreme in lower and moister districts are not uncomfortable here. Some years see very low temperatures recorded in certain parts of the State. These extreme temperatures, however, are usually of short duration and a study of the mean temperatures for these sections shows a very much more equable climate than recorded extremes would lead one to expect.

EDUCATION

Montana common schools received an endowment of nearly five and one-quarter million acres of land when the State was admitted to the Union. Less than 1,000,000 acres of this land has been sold up to the present time, yet the income from the money, which is invested in bonds, warrants, and farm loans, was sufficient in 1917 to provide \$5.50 for each child of school age.

No community is so remote as to be without school facilities. There are now more than 3,000 schoolhouses, many of them country consolidated schools giving partial or complete high school instructions. Liberal use is made of the schoolhouse as a gathering place for all kinds of community meetings. They are, in fact, community centers.

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Agriculture Building, Montana State College of Agriculture and Mechanic Arts. Here will be found the officers of the staff of the Montana Experiment Station



Unique and attractive school buildings are the rule in Montana. No community is so remote as to be without school facilities.

Special support for high schools was provided some twenty years ago when the State adopted the county high school law. A later amendment has tended toward building up better high schools in the smaller towns and strengthening the high school work in the rural consolidated schools. There are 165 high schools in the State.

For some years the work of higher education in the State institutions has been unified under a system which gives to the people many of the advantages enjoyed, in states where all the institutions are consolidated in one.

At Missoula is located the State University. Here are general collegiate courses offering wide opportunity of selection to meet various needs both for undergraduate and for graduate study. Here also are the five professional schools of law, pharmacy, forestry, journalism, and music.

The main technical activities are centered at Bozeman, in the famous Gallatin Valley, at the College of Agriculture and Mechanic Arts, with its extensive and well equipped experiment farms. Here are various courses of instruction, particularly in agriculture, engineering, applied science, and in household and industrial arts. From the college, as a center, the agricultural extension service, with its county agricultural agents, its home demon-

strators, and its leaders of boys' and girls' club work, reaches out into every corner of the State.

In the city of Butte, on the richest ore-producing hill in the world, is located the State School of Mines, where the students are brought into daily contact with the men who are engaged in taking out copper ore and carrying on the work of the great reduction plants.

For the training of teachers for the public schools the State has established at Dillon the State Normal College. Students have here the opportunity for actual practice in one of the most practical and efficient systems of model training schools, both town and rural, in the West.

These four institutions together make up "The University of Montana," whose executive headquarters are located at the State Capitol in Helena.

Tuition in these institutions is free to all residents of the State, and arrangements are made whereby excellent living accommodations are available at very moderate cost. In the past year a most interesting experiment has been carried out very successfully for equalizing to residents of all parts of the State the advantages of higher education; the State has refunded to every student all necessary railroad fare in excess of \$5.00 for the round trip between home and the institution attended.



Meeting of one of the County Farm Bureaus

In addition to the state institutions there are a number of private and denominational schools, such as the Montana Wesleyan College (Methodist) and Mount St. Charles College (Catholic) at Helena, and the Billings Polytechnic School.

The homeseeker who appreciates the benefits of membership in a good farm organization will have ample opportunity to join progressive associations.

As a means of uniting both the organized and the unorganized farmers in an association for the development of more economic agriculture, the establishment of community ideals, and the general improvement of the well being, prosperity, and happiness of the country people, the Farm Bureau has been formed in the principal agricultural counties of the State. The county agricultural agent, who works under the direction of the Farm Bureau, and who assist the organization in the solution of its problems, is of great benefit to the new settlers. Familiar with the soil, climate, and crop conditions, and with the experience of the best farmers of the county back of him, he receives at the Farm Bureau office many calls for advice from the new settlers.

With the assistance of extension specialists from the State College, farmers' institutes, short courses,

demonstrations, lectures, and picnics are held under the auspices of the Farm Bureau.

The Jesuit missionary preceded the gold seeker into Montana. Later, and with the gold hunters, came ministers and missionaries of the various denominations. To-day Montana is dotted with churches representing all denominations in America. Large church buildings are the pride of every Montana city and town. The churches are well organized, with hospitals, charitable institutions, and schools operated under their various managements.

Montana has long been recognized as one of the states leading in opportunities and possibilities for the live stock breeder. Up to the present, the resources for the production of stock have not been developed to anything like their maximum. The pioneer stockman considered that this great north-western State would never be developed as a breeding ground; that the soil, feed, and climate were adapted only to growing and fattening of live stock. Led by a few far-seeing breeders, this old idea has been completely dispelled and it has been conclu-



Hogs in alfalfa, in Eastern Montana. This farm produces from two to three car loads of hogs for market each year

sively proven that all classes and types of improved live stock can be bred and developed to the degree that they are second to none when placed in the show ring, on the race courses, or on the commercial market.

Montana, the range state, has been greatly changed in the past twenty-five years. Much of the land has been taken over for farming purposes, and as a result new fields are opened for both the live stock feeder and breeder. Greater development in general farming will come in the next few years, but this State will always offer great opportunity for live stock production under both farm and range conditions.

In the pioneer days cattle were bought in the Southwest and trailed across the country to the natural feeding grounds of Montana. Here on the native grasses and good water they grew and fattened. Seeing the natural advantages of the climate, soil, and feeds, breeding herds were soon established on the open ranges. From these early established herds cattle have been sent to the leading markets by train loads and command the top prices, both as feeders and as finished beef. Montana bred range cattle have won many ribbons at the International Live Stock Exposition where they

compete with cattle from all sections of the United States.

Range cattle are and will continue to be a large factor in the live stock industry of the State. On the 60,000,000 acres of mountainous and broken prairie lands capable of growing grass are yet found thousands of cattle. The large herds of the past are gradually disappearing, but thousands of small owners are keeping up the average number, the range providing the summer feed and the farms adjoining those summer ranges providing winter feed. The evolution of the range cattle business has changed from an exclusive feeding to a breeding industry.

Feeds adapted to breeding, growing, and fattening of cattle can be grown abundantly in the different sections. For winter feeding the corn, oats, barley, alfalfa, and clover hay of the Yellowstone drainage area; the clover, alfalfa, blue joint, and native hays, combined with the oats and barley grown in the central, northern, and western parts of the State, give equal results in growing and fattening cattle with similar feeds in the older American farming sections. In fact, native hay produced in some sections of the State has such feeding value that cattle can be fattened on hay alone.



Sheep on open range in Montana.

Exceptional opportunities are offered for small bands of sheep on open range

The forest ranges, native grasses of the open range and irrigated pastures, afford summer feed that is second to none, while in the irrigated valleys pasture can be established that compares favorably with the century-old pastures of England and Scotland.

As farming develops in the State, the demand for good, well-bred cattle for foundation herds will increase. Beef cattle can be wintered to good advantage on the coarse forages and straw produced on the farm.

As in the older farming sections, the silo is coming to be part of the beef cattle breeder's farm equipment. Corn in the lower and warmer valleys, giant Russian sunflowers or oats and peas in the higher, cooler valleys, can be successfully grown for silage with very satisfactory yields per acre.

During the past few years no class of live stock in Montana has returned as high a per cent on money invested as has sheep. The feeds and climatic conditions of the State are admirably adapted to the production of high-class wool and mutton. Grade lambs are frequently shipped to market, directly from summer range, weighing seventy-five to eighty pounds. Wool produced in Montana is much sought after by manufacturers, because of the low shrink as compared with some other range wools and because of its lustre, length, and strength of staple.

The range country will continue to produce the greater proportion of the sheep and wool of the State. Over much of the range country sheep appear to do particularly well, and are the most efficient agency for turning the yearly grass crop into products valuable to man.

On the farms, sheep are receiving increased attention. Here nearly all the common breeds are found, but the various mutton breeds are the most popular.

Farmers in both the irrigated and dry land sections have an unusual opportunity for profitable production of high-class hogs. Much waste in the wheat, oats, pea, and bean fields can be converted into profit by turning hogs into the fields after harvest.

For growing and feeding hogs, Montana grains, supplemented by alfalfa hay or with by-products from Montana mills and packing plants, are second to none. Proof of this statement is evidenced by the fact that Montana grown and fed hogs not only topped the Chicago market, but are much sought after by firms manufacturing the highest grades of hams and bacon.

Experiments at the Montana State Experiment Station demonstrate that in the dry lot 100 pounds of pork can be produced with 360 to 400 pounds of barley, supplemented by 8 pounds of tannage. By utilization of forage crops during the summer

MONTANA



The State is admirably adapted naturally to the rapid growth and development of the dairy industry

for the growing pigs, the gains can be made at approximately 325 pounds of barley per 100 pounds of gain.

The development of packing plants and markets in several parts of the State combined with the strong demand for pure-bred breeding stock, an abundance of good feed and water, and practically no loss from cholera, make a very promising future for the hog breeder.

Montana range horses have long been noted for their constitution and their enduring qualities. This reputation which the early horse stock gained was not due to superior strains of blood and breeding, but to the fact that the native feeds, soil, and climate are particularly adapted to the development of strong, rugged horses.

The demand for small, light horses is very limited at present, but heavy, sound draft stock will always be in good demand by Montana farmers and ranchers.

POSSIBILITIES OF DAIRYING IN MONTANA

This State is admirably adapted naturally to rapid growth and development of the dairy industry. In the mountainous areas exists a wide range of

climatic conditions. The sheltered upland valleys, where the days are pleasant and the nights are cool, will always furnish an abundance of cheap pasturage and forage crops for cows, while the rich lower valleys will be productive of grains, grasses, alfalfa, clovers, sunflowers, oats, peas, and other silage crops. Such conditions make possible the economical production of milk and cream of very high quality. On several of the irrigated government projects the dairy industry is growing very rapidly. The land units on these areas are usually small and require an intensive system of farming. The dairy business also fits in well with the beet sugar and pea canning industries, a combination which insures a profitable disposition of beet tops, beet pulp, and canning refuse.

There are few places on the American continent so well adapted naturally to the production of strong, vigorous cows as is Montana, where the number is increasing rapidly. In 1908 there were 75,000 head, while in 1918 they numbered 179,000, an increase of more than 138 per cent in ten years. The number of Holstein cows in Montana at present is greater than all other dairy breeds combined, yet there are a number of splendid pure bred and grade herds of Jersey, Guernsey, Ayrshire, and Brown Swiss, which are well adapted to wide variation of climate.

MONTANA



Timothy and alsike clover is a paying crop in Western Montana

Facilities for handling the output of the dairy herds are improving each year. The number of creameries, about sixty-four at present, has doubled in the past five years. The output of butter in 1918 was over 6,500,000 pounds, but was not sufficient to supply even local demands. Cheese factories also are coming to the front. The first one to operate continuously throughout the year was started in 1915. In the summer of 1918 there were ten in operation, with an output of nearly 1,000,000 pounds of high-grade cheese.

The co-operative plan of manufacturing butter and cheese is very successful.

The output of dairy products in Montana has not kept pace with the increase of population. The demand still is greater than the supply. Butte, Great Falls, Helena, Billings, Lewistown, Missoula, Anaconda, and other growing cities furnish splendid markets at all seasons of the year for milk, butter, cheese, and frozen products.

The State of Montana maintains a department of dairy husbandry at the State College of Agriculture and Mechanic Arts at Bozeman, with splendid facilities for giving instructions in farm dairying, in the manufacture of dairy products, and dairy exten-

sion work in college and short courses, farmers' extension schools, dairy meetings, high schools, dairy calf clubs, and agricultural fairs. There are also the State Dairymen's Association and Butter and Cheese Makers' Association which meet annually and do much to bring the dairymen together for mutual benefit.

PUBLIC AND STATE LANDS

The report of the commissioner of the general land office, for the year ending July 1, 1917, shows that there were on that date 11,818,414 acres of unapportioned and unreserved public lands in Montana. In that year one-third of all of the public land filed upon in the United States was in Montana. Probably less than half of the land now open for filing in the State under the homestead laws is suitable for farming. Much of it has been classified as grazing, timber, and broken land. Such of this homestead land as would be desirable for those who want to make farm homes, is located a considerable distance from railroads and towns. Until there are extensions of railway systems this land will not be desirable for the homeseeker, unless he has a fair amount



An open view of Lignite Coal. The common domestic fuel for the settler

of capital and is willing to live a considerable distance from the more modern conveniences.

Under the public land laws a man may take a homestead of 640 acres of grazing land or 320 acres of semi-arid land suitable for farming without irrigation and which has no possibility of irrigation. The third class is land which may be taken up in 160-acre tracts. There remains for entry but little land that comes under the 640-acre law.

There are ten land districts in Montana, each containing a United States Land Office for the administration of the public land affairs of that particular district. These land offices are located at Billings, Bozeman, Glasgow, Great Falls, Havre, Helena, Kalispell, Lewistown, Miles City, and Missoula.

Several million acres granted by the Federal Government to the public schools and higher educational institutions in Montana are available for settlers. Under the constitution these lands cannot be sold for less than \$10 an acre. Once a year lands in each county are put up at auction and sold to the highest bidder.

All State lands except coal land and some timber land are for sale, but before the lands are put up at auction an application to buy must be filed. Those who wish to have State land offered for sale are required to make formal application to the

State Land Office at Helena for the desired tract. The land will then be offered at the next sale held in the county where the land is located. These applications must be filed five weeks prior to the date of the sale. Sale of State lands can be made only to citizens of the United States, to those who have declared their intention to become citizens or to corporations organized under the laws of the State.

Not more than 160 acres classified as agricultural land susceptible of irrigation, nor more than 320 acres classified as agricultural land not susceptible of irrigation, nor more than 640 acres classified as grazing land shall be sold to one purchaser. This makes a total of 1120 acres in all that one person may buy.

MONTANA RESOURCES

Montana has an area in acres of 90,000,000, of which 30,000,000 acres are classified as farm lands, 30,000,000 as grazing lands and the same amount in timber and mineral lands. It is estimated that not to exceed 8,000,000 acres of farming land are under cultivation, leaving undeveloped more than 20,000,000 acres suitable for agriculture.

While the days of the big range herds of cattle and bands of sheep have virtually passed in this

State, the millions of acres of grazing lands remain, and they will for all time furnish grazing, not for the men who own thousands of head of live stock, but for the farmer who runs a small bunch of cattle or a little band of sheep.

One of the greatest and most valuable of the undeveloped resources of Montana is phosphate, large deposits of which are found in southern Montana. It will be many years before the lands of the State will require the application of a commercial fertilizer, but when that time does come Montana will have the material within its borders.

Though Montana, in 1917, ranked second among the states in the production of silver, copper and zinc and fifth in the production of gold, it may be said truthfully that its mineral resources have been but scratched and its wealth in this respect has reached only the initial stage of development. Large and profitable as have been the markets for farm products in the past in the centers of the mineral industry, they will furnish an outlet for produce in the future, as the resources are developed, that will mean thousands of dollars to the farmer.

In its timbered sections it is estimated that Montana has standing on permanent productive timber land, fifty-eight billion feet of timber. The sawmill industry was of necessity among the first when the pioneers came and it has developed until to-day 15,000 men are thus employed. Many large sawmills are in operation and the annual product of the merchantable timber is four hundred million feet. More than half of the merchantable timber in Montana is in the national forest reserves, owned and under the jurisdiction of the Federal Government. The Government ownership assures the development of this source of wealth and not its elimination, as has been the experience where the timbered areas were individually owned.

Montana has other natural resources, in large part undeveloped. It has developed coal lands in almost every section of the State, while those undeveloped extend over a large territory. An idea of the development of the coal mining industry here may be had when it is said that the output of the coal mines increased from two million tons in 1907 to about five million tons in 1917.

In northern, central and southeastern Montana there have been oil and gas developments which indicate that in these two resources the State has untold wealth. It is only within the past two years that the United States Geological survey reported Montana among the oil producing states. In 1916 the State was credited with a production

of 44,917 barrels. In 1917 this production more than doubled, according to the same authority. The natural gas areas is larger than the oil fields. Wells have been struck in the northern, central and southern portions of the State.

In southwestern Montana, in Jefferson County, there are proved vast deposits of iron ore, so far not utilized, but available when Montana reaches the state where industrial development will require that material.

Developed and undeveloped water power for generating electricity is not only a present source of natural wealth, but one the value of which can not be estimated. Montana with its mountain streams and its great rivers is admirably adapted to the generation of hydro-electric power. The development up to this time aggregates 250,000 horse-power, utilized in the operation of the mines at Butte and elsewhere, in the running of street cars in several cities, the lighting of many towns, and in the operation of numerous factories. One of the uses to which this hydro-electric power has been devoted, of importance to the agricultural development of the State, is in irrigation.

The home builder in Montana is fortunate in that the materials needed for construction are abundant and reasonable in price. If he settles in the timbered sections he can obtain from the officials of the forest reserve service a permit to purchase logs for houses and other home structures and posts for fencing at a very low figure. There are small sawmills in the vicinity of these forests where one can have the logs cut into boards.

Those who take up their residence in the sections which are not timbered, may purchase, at moderate cost, lumber which is manufactured in Montana from timber cut from privately owned lands. There are two large cement factories with a capacity for supplying the State requirements even should the requirements grow far beyond present proportions.

Equally fortunate is the settler in his ability to obtain fuel. Under the rules of the forest service, the country dweller may obtain without any cost beyond the hauling, his year's supply of wood for fuel. If he lives too far from a timbered section to avail himself of this privilege, he can obtain bituminous coal from Montana mines. In northern and eastern Montana there are very extensive deposits of lignite coal, which can be had for the digging. On many ranches in those sections the residents have this lignite coal on their own property.



A main irrigation Canal. The outstanding feature of Montana's irrigation projects is the abundant supply of water

RECLAMATION AND IRRIGATION

The many people unfamiliar with irrigation farming are inclined to regard this type of agriculture as very costly, and necessary only where desert conditions prevail. That this conclusion is not well founded is shown by the uniformly high productivity of irrigated land and the policy of the Federal Government to increase the irrigated areas.

On the irrigated farm one more factor of production—the water supply—is under the farmer's control. When water is needed for the pastures or growing crops it may be added. This prevents the drop in feed supply by the drying of the pastures that almost always occurs where irrigation is not practiced. The pastures are kept in active growth.

The cost of irrigation in Montana ranges from \$2.00 to \$3.00 per acre, for all features of the work. Irrigation simply supplements the natural precipitation and insures against dry years and dry periods.

With the western part of Montana cut by the continental divide, the State has mountains that act as a great reservoir, storing up in the winter, fall, and spring the snows that feed thousands of creeks and rivers during the summer. The rapid fall of the streams through the valleys and the mountainous country where the streams arise combine to offer exceptional irrigation facilities.

In 1910 Montana stood third among the states of the Union in point of area under irrigation. At that time the State had 1,678,084 acres actually irrigated, with 526,000 acres under the ditch ready to have the water turned on, and 1,310,000 acres in projects under way. The war delayed the fullest development of these projects but there has been considerable increase in the acreage since 1910 and provision is being made to push the work rapidly. Of a total of 90,000,000 acres of land in Montana there is 30,000,000 acres classed as farming land. Of this amount, it is estimated that 12,000,000 acres may be irrigated.

In the southeastern section of the State is the group of counties comprising Custer, Fallon, Dawson, Rosebud, and Big Horn. More than 100,000 acres in this division are irrigated and more than 200,000 acres being provided for in the capability of present projects and of projects under way.

In the Upper Yellowstone district are embraced mainly the counties of Yellowstone, Carbon, Stillwater, Sweetgrass, and Park. In 1910 there were 400,000 acres irrigated in this section. About 25,000 acres are annually devoted to sugar beet raising, the sugar factory at Billings being located in the heart of this irrigated district. This region is among the best watered in Montana. The Yellowstone River rises in the mountains of Yellowstone National Park and its flow is ample for all present diversions from

the main stream itself. The principal tributaries which water irrigated valleys are the Shields and Boulder rivers, Big Timber and Sweet Grass creeks, Stillwater River, and Clarke Fork and Rocky Creek. The flow of the Yellowstone near the Montana line is nearly 2,000,000 acre-feet.

The Upper Missouri section includes the counties of Beaverhead, Madison, Gallatin, Jefferson, Broadwater, and Lewis and Clark. The last census gives this section the largest irrigated area a total of 540,000 acres or practically one-third the State total. The principal water supply is obtained from the main headwater branches of the Missouri, the Gallatin, Jefferson, and Madison rivers. The Beaverhead River, in this section, was one of the first streams of Montana to be used for irrigation. The Gallatin Valley is the most fully developed area in this section.

The southwestern section covers the portion of Montana west of the continental divide and tributary to the Missouri River. It comprises the counties of Ravalli, Granite, Powell, with parts of Missoula, Deer Lodge, Lewis and Clark, and Silver Bow. In 1909 there were about 225,000 acres irrigated in this section, 100,000 acres more being included in projects. Other sources of water supply are the Big Blackfoot River, the Missoula River, whose diversion is limited, and the Bitter Root River. From the Bitter Root River and its tributaries 100,700 acres are irrigated. The irrigable land of this valley has been quite largely developed. The high values of land make practical the construction of systems whose cost would be above the economical limit in other parts of the State.

The northeast section of the State includes the counties of Hill, Blaine, Valley, Phillips, and Sheridan, and a part of Chouteau County. This section includes the drainage from north of the Missouri River, the Milk River being the principal stream. While the Milk River does not head in regions of sufficient snowfall to give it a sustained summer flow, it is joined with the St. Mary's, which is sustained by the heavy glaciers, of the Glacier Park region. In order to use the irregular flow of the Milk River spring flooding has been practiced. During the spring flood season, the water is diverted to the soil and held by dikes until the soil has absorbed its capacity. This water is sufficient to mature grain and in some cases two or three crops of alfalfa.

The Milk River project includes an irrigable area of 200,000 acres. Irrigation is carried on along creeks tributary to the Milk River, in Chouteau, Hill, Blaine, and Phillips counties. Along the

Poplar and Big Muddy rivers of Sheridan County large irrigated tracts have been developed.

The north central irrigation division of Montana includes Teton County and parts of Hill, Chouteau, Cascade, Toole, and Lewis and Clark counties. Teton County has the largest proportion of irrigated land of all the Montana counties. In this county are found parts of the following projects: Sun River, Dearborn River, Conrad-Valier, Blackfeet, Teton, and Little Missouri. The Sun River project has an irrigable area of 173,795 acres. With more than 500,000 acres in this section of the State to come under projects at present definitely planned or already under construction, the advancement of the section can be only rapid.

The central Montana division includes the counties of Musselshell, Meagher, Wheatland, Fergus, and parts of Chouteau and Cascade. The Musselshell project, the Flatwillow project, Smith River and Judith River, all supply water over a large territory. More than 200,000 acres are under the ditch or included in projects now under way. The Musselshell River irrigates its valley lands by direct flow. An additional area of thousands of acres could be irrigated by this stream.

The northwestern district comprises Flathead, Lincoln, Sanders, Mineral, and parts of Powell and Missoula counties. It is the drainage section of the Kootenai and Flathead rivers and the Clark fork of the Columbia. Agriculture without irrigation is most common in this part of the State, although a total of about 40,000 acres is being irrigated. Only a very little irrigation is practiced north of the Flathead Lake, hardly more than 3,500 acres. South of the lake is territory that formerly was included in the Flathead Indian reservation. A small amount of land around the missions was irrigated. About 5,000 acres in this part of the division are receiving irrigation water.

TRANSPORTATION

Montana, with an average length from east to west of 500 miles and an average width of 300 miles, has excellent transportation facilities. Three great transcontinental railroads traverse it from east to west: The Northern Pacific through the older southern and central sections; the Chicago, Milwaukee & St. Paul through the central section, and the Great Northern through the northern section. The Oregon Short Line R. R. reaches the southern section; Chicago, Burlington & Quincy R. R., the southeastern section; Gilmore & Pittsburg R. R. in the southwestern section; Minneapolis, St. Paul & Sault Ste. Marie in the northeastern section. In



Potatoes on irrigated land in Montana are of high quality and yield from 400 bushels upward per acre

addition to the main lines, each of these transcontinental railroads has constructed numerous branch lines, reaching the outer farming sections and giving the producer the benefits of railroad transportation.

In the majority of the counties are branch lines bringing into close contact with the great markets of the State and Nation communities which ten years ago were isolated. In the development of the agricultural resources of Montana the railroads have played a most prominent part.

Realizing that rural roads constitute a vital factor in the development of a state, Montana has in recent years paid particular attention to the construction of highways designed to open up those sections at a distance from the railroads and to reduce the expense of transporting farm products to market. Road building in Montana is under the jurisdiction of a State Highway Commission, and the State has complied with all the requirements of the Federal Government so as to receive the benefits of the Federal Aid Loan Act. In thirty-one counties fifty-two Federal aid projects have been petitioned for. All of these projects provide for the improvement of

agricultural haulage roads. The State Highway Commission furnishes the plans and supervises the construction of the roads so that counties are under no expense for that part of the work. During the coming five years Montana will spend on its roads \$5,000,000, the greater portion of which will be expended on main agricultural roads and on the improvement of local rural roads.

There is hardly a portion of Montana which does not enjoy telephonic communication. In many instances this is through rural telephone lines owned by the farmers, with connections with the larger systems. In other instances the large companies have developed the business. In the forested sections of the State, the National Forest Service has installed telephone systems which in many cases co-operate with the farmers' lines.

Rural mail routes are found in all portions of the State and from every town of any consequence there are rural lines, some with a daily service and others with service every other day. In addition to these rural routes there are star routes which serve the more sparsely settled sections.



Part of a 70-acre Eastern cornfield (Lakin's White Dent). This is a 1,500-acre farm. Corn plowed twice and looks like a 50-bushel crop

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United States Railroad Administration AGRICULTURAL SECTION

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FOR THE USE OF ALL RAILROADS IN THE STATE OF MONTANA

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